

Attorney Docket No.: **13257.00044 (UMD-0084)**
Inventors: **Sciorra and Zimnoch**
Serial No.: **09/869,741**
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REMARKS

Claims 1-24 and 26-39 are pending in the instant application. Claims 1-24 and 26-39 have been rejected. No new matter has been added by this amendment. Reconsideration is respectfully requested in light of the following remarks.

I. Rejections Under 35 U.S.C. §103

Claims 1-9, 12, 14, 16-20, 22-24, 26-29 and 37-39 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Farber (U.S. Patent No. 5,602,042) in view of Brown et al. (U.S. Patent No. 5,336,614). It is suggested that Farber teaches a method and apparatus for magnetically separating biological particles from a mixture. The Examiner suggests that Farber teaches providing superparamagnetic beads coated with a ligand with specific affinity to target molecules; combining the sample suspected of containing the target molecules with such beads to form a mixture; exposing the mixture to a plate with a collection surface so that the beads flow through the fluid toward the magnetic field source so that the target molecules are collected against the plate surface. The Examiner further suggests that Farber teaches the sample and target molecules of the instant invention as well as the pre-determined increase in the magnetic field in a pulsing manner. It is further suggested that Farber teaches deactivating the magnetic field to remove the magnetic particle. The Examiner acknowledges that Farber does not teach placing the suspension of sample and magnetic particles onto a substrate material, wherein the substrate material comprises a viscous solution; the substrate material is methylcellulose and the solution is between 1.7% and 2% methylcellulose; however, it

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is suggested that Brown teaches cultivating cells in a novel gel system comprising methylcellulose solutions which have thixotropic properties which preserve colony morphology. It is suggested that it would have been obvious to one of skill in the art to add methylcellulose as taught by Brown to the suspension of magnetic particles and target of Farber to preserve the colony morphology of cells being separated. It is further suggested that because methylcellulose is known as a growth culture media and a viscous solution, it would have been obvious to one of skill in the art to recognize the properties of methylcellulose since the substrate material is the same as that of the present invention and that the separation involves populations of cells and thus culture media is needed for maintaining the physiological environment and vitality of these cells. The Examiner also suggests that it would have been obvious to use the methylcellulose at a range of 1.7% to 2.0% because discovering optimal ranges involves routine skill in the art.

Claims 32-36 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Farber (U.S. Patent No. 5,602,042) in view of Brown. The Examiner suggests that while Farber does not teach the frequency at which the magnetic field is activated or deactivated is from about 0.5 to 10 seconds per pulse or 2.0 seconds per pulse; and a magnetic field strength of about 1.5 to 2.0 or at least 3.0 Tesla, it would have been obvious to one of skill in the art to arrive at these specific pulse ranges and magnetic field strengths since discovering the optimum or workable ranges involves only routine skill in the art.

Claims 10, 11, 13, 15, 21, and 30 have also been rejected under 35 U.S.C. 103(a) as being unpatentable over Farber (U.S.

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Patent No. 5,602,042) in view of Brown as applied to claims 1-9, 12, 14, 16-20, 22-24, 29, 37-39 above and further in view of Terstappen et al. (U.S. Patent No. 5,646,001). It is suggested that while Farber and Brown do not teach the elements of the rejected claims, Terstappen et al. disclose these elements.

Claim 31 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Farber (U.S. Patent No. 5,602,042) in view of Brown as applied to claim 1, and further in view of Tseng-Law (U.S. Patent No. 6,017,719). It is suggested that while Farber and Brown fail to teach labeling non-target substances with a fluorescent marker, Tseng-Law et al. teaches positive and negative methods of cell selection from a cell suspension, wherein the positive cells are labeled with a fluorescent marker.

Applicants respectfully traverse these rejections.

At the outset, Applicants respectfully wish to point out that the primary claim reads on placing the suspension onto a substrate material, wherein the substrate material comprises a viscous solution that substantially prevents diffusion of the magnetic component unless a magnetic force is applied. Nowhere in the teachings of Farber does Applicant find reference to placing a sample onto a substrate material. Rather, the method of Farber is based upon submerging plate **16** into a fluid sample **26**, wherein magnetic particles are collected over the surface **42** of the plate **16** using a magnetic field (column 6, line 61, to column 7, line 47). Placing a sample onto a substrate material would require a significant redesign of the apparatus of Farber.

In addition to failing to teach or suggest each element of the claim, it is respectfully submitted that the referenced

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teachings are absent the necessary teachings and motivation to modify or combine the teachings therein.

Brown discloses a methylcellulose/agarose gel system for cultivating cells. However, there is no teaching or suggestion by Brown to use the disclosed gel system for separating target cells from non-target cells.

Furthermore, given the teachings of Farber there would be no motivation for one of skill to look to Brown for viscous solutions of methylcellulose because the apparatus of Farber applies shear forces to the fluid sample **26** to disperse cells in the sample fluid (see column 8, lines 16-25). As such, a viscous solution would render the apparatus of Farber inoperable for its intended purpose because the viscous solution would prevent the shear forces from dispersing cells in the sample fluid.

If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). MPEP 2143.01.

Moreover, Brown teaches that "the thixotropic properties of the methylcellulose result in a gel-like state at incubator temperature (33°-40°C. or 37°C.) if the fluid is not disturbed. This property may be important for preservation of colony morphology" (see column 2, lines 60-64). Therefore there is simply no rationale for combining the teachings of Farber and Brown to maintain the physiological environment, vitality of cells, and preserve colony morphology because the shear forces applied by the apparatus of Farber would disrupt the gel-like

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state of the methylcellulose of Brown and therefore not achieve colony morphology and cell vitality preservation.

The Patent Office "cannot use hindsight reconstruction to pick and choose among isolated disclosure in the prior art to deprecate the claimed invention." *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1780, 1783 (Fed. Cir. 1988). Rather, in making a rejection under 35 U.S.C. 103(a), the Patent Office must show a teaching or motivation to combine the cited prior art references. See *Dembiczak*, 1783 F.3d at 999, 50 USPQ2d at 1617. "Combining prior art references without evidence for such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability--the essence of hindsight." *Id.* Therefore, "[w]hen determining the patentability of a claimed invention which combines two known elements, 'the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.'" *In re Beattie*, 974 F.2d 1309, 1311-12, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992) (quoting *Lindemann*, 730 F.2d at 1462, 221 USPQ at 488).

Applicants respectfully believe that the rejected claims have been used as a blueprint for reconstructing the elements of the claimed invention on the basis that it would have been obvious to one of skill in the art to combine the magnetic separation of biological particles from a mixture as taught by Farber with the gel forming methylcellulose of Brown in order. However, there is simply no motivation to combine the teachings of Farber and Brown based on the teachings of these references as a whole. In so far as Terstappen and Tseng-Law et al. teach

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elements found in dependent claims 10, 11, 13, 15, 21, 30, and 31, these references fail to overcome the deficiencies of the primary references of Farber and Brown. Accordingly, because there is no teaching, suggestion or motivation to modify or combine the referenced teachings, the cited references cannot be held to make the present invention obvious under 35 U.S.C. 103(a). It is therefore respectfully requested that these rejections be reconsidered and withdrawn.

II. Conclusion

The Applicants believe that the foregoing comprises a full and complete response to the Office Action of record. Accordingly, favorable reconsideration and subsequent allowance of the pending claims is earnestly solicited.

Respectfully submitted,



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Date: **June 8, 2006**

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